

## Apparatus and Process for Surface Treatment of Carbon Fibers

### **Disclosure Number**

201102557

### **Technology Summary**

This invention relates, in general, to the manufacture of carbon fibers and their composites materials. More particularly, it pertains to a process for the surface treatment of carbon fiber by gas phase oxidation so as to improve the adhesion of the fiber to a matrix in the manufacture of carbon fiber-reinforced composite materials. The invention is effectively applicable to the surface treatment of carbon fibers made of not only polyacrylonitrile (PAN), pitch and rayon fibers but also other materials as precursors. The method uses gas phase differs than industrial liquid base electrochemical practice. Method also eliminates washing and drying steps of surface treatment in industrial electrochemical process, which is potential to reduce the carbon fiber process cost. Surface atomic oxygen content mainly proportional to the surface functional group containing oxygen. Surface functional groups leads to create chemical bonds between fiber and matrix in composites, and thus better mechanical properties. The method produces twice or more atomic oxygen content on carbon fiber surface as compared to traditional industrial electrochemical surface treatment.

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